What is claimed is:

1. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, at least one position where said brush chains of said magnetic carrier grains rise exists in a portion where an electric field formed between a facing zone where said image carrier and said developer carrier face each other has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R) / (3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c / (100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains,

D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

2. The method as claimed in claim 1, wherein when the brush chains of the carrier grains rise on the developer carrier, a magnet present in said developing zone separates tips of the magnet brush from a developer layer formed on said developer carrier by the carrier grains.

3. The method as claimed in claim 1, wherein when the brush chains of the carrier grains fall down on said developer carrier, a magnet present in the developing zone causes the tips of the magnet brush join a developer layer formed on said developer carrier by the carrier grains.

4. The method as claimed in claim 1, wherein a ratio of a linear velocity Vs of said developer carrier to a linear velocity Vp of said image carrier (Vs/Vp) is greater than 0.9, but smaller than 4.

5. The method as claimed in claim 1, wherein development is effected by an alternating electric field formed between said image carrier and said developer carrier.

6. In a method of developing a latent image formed

on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, at least one continuous position where said brush chains of said magnetic carrier grains rise and then fall down exists in a portion where an electric field formed between a facing zone where said image carrier and said developer carrier face each other has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner

grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

7. The method as claimed in claim 6, wherein when the brush chains of the carrier grains rise on the developer carrier, a magnet present in said developing zone separates tips of the magnet brush from a developer layer formed on said developer carrier by the carrier grains.

8. The method as claimed in claim 6, wherein when the brush chains of the carrier grains fall down on said developer carrier, a magnet present in the developing zone causes the tips of the magnet brush join a developer layer formed on said developer carrier by the carrier grains.

9. The method as claimed in claim 6, wherein a ratio of a linear velocity Vs of said developer carrier to a linear velocity Vp of said image carrier (Vs/Vp) is greater than 0.9, but smaller than 4.

10. The method as claimed in claim 6, wherein development is effected by an alternating electric field formed between said image carrier and said developer carrier.

11. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier

grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, and causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, said magnetic carrier grains, holding said toner grains thereon, splash said toner grains toward said image carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c).d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m³) of said toner grains, ρ_c denotes a specific gravity (kg/m³) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

12. The method as claimed in claim 11, wherein the magnet brush formed in the developing zone is caused to

contact said image carrier and release the toner grains from the carrier grains, and said toner grains released are splashed toward said image carrier.

13. The method as claimed in claim 11, wherein the magnet brush formed in the developing zone is caused to contact said image carrier and remove toner grains present on said image carrier.

14. The method as claimed in claim 11, wherein a ratio of a linear velocity Vs of said developer carrier to a linear velocity Vp of said image carrier (Vs/Vp) is greater than 0.9, but smaller than 4.

15. The method as claimed in claim 11, wherein development is effected by an alternating electric field formed between said image carrier and said developer carrier.

16. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, and causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, a magnet brush formed by said magnetic carrier grains, holding said toner grains thereon, rub or adjoin said image carrier in

a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

17. The method as claimed in claim 16, wherein the magnet brush rubs or adjoins said image carrier to thereby remove toner grains present on said image carrier.

18. The method as claimed in claim 16, wherein a ratio of a linear velocity Vs of said developer carrier to a linear velocity Vp of said image carrier (Vs/Vp) is greater than 0.9, but smaller than 4.

19. The method as claimed in claim 16, wherein development is effected by an alternating electric field

formed between said image carrier and said developer carrier.

20. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, and causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and then fall, said magnet brush contact said image carrier to thereby splash said free toner grains toward said image carrier and said magnet brush rubs or adjoins said developer carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R) / (3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c / (100 - T_c) \cdot d^3 \cdot \rho_T$, A

denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

21. The method as claimed in claim 20, wherein the magnet brush formed in the developing zone is caused to contact said image carrier to release the toner grains, and said magnet brush rubs or adjoins said image carrier to thereby remove toner grains present on said image carrier.

22. The method as claimed in claim 20, wherein a ratio of a linear velocity Vs of said developer carrier to a linear velocity Vp of said image carrier (Vs/Vp) is greater than 0.9, but smaller than 4.

23. The method as claimed in claim 20, wherein development is effected by an alternating electric field formed between said image carrier and said developer carrier.

24. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which

constitute a developer together with magnetic carrier grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnets therein, and causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and then fall and said magnet brush adjoins said image carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m_3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said

carrier grains, ε_0 is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

25. The method as claimed in claim 24, wherein the magnet brush formed on said developer carrier performs development without contacting said image carrier.

26. The method as claimed in claim 24, wherein when the brush chains of the carrier grains rise on the developer carrier, a magnet present in said developing zone separates tips of the magnet brush from a developer layer formed on said developer carrier by the carrier grains.

27. The method as claimed in claim 24, wherein when the brush chains of the carrier grains fall down on said developer carrier, a magnet present in the developing zone causes the tips of the magnet brush join a developer layer formed on said developer carrier by the carrier grains.

28. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein, and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, applying an electric field between said developer carrier and said image carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains

thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains to thereby develop a latent image formed on said image carrier, at least one position where said brush chains of said magnetic carrier grains rise exists in a portion where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

29. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein, and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, applying an electric field between said

developer carrier and said image carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains to thereby develop a latent image formed on said image carrier, at least one continuous position where said brush chains of said magnetic carrier grains rise and then fall down exists in a portion where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

30. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein,

and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, and applying an electric field between said developer carrier and said image carrier to thereby develop a latent image formed on said image carrier, said magnetic carrier grains, holding said toner grains thereon, splash said toner grains toward said image carrier in a zone where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

31. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein,

and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, and applying an electric field between said developer carrier and said image carrier to thereby develop a latent image formed on said image carrier, a magnet brush formed by said magnetic carrier grains, holding said toner grains thereon, rub or adjoin said image carrier in a zone where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

32. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein,

and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, and applying an electric field between said developer carrier and said image carrier to thereby develop a latent image formed on said image carrier, a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and then fall and said magnet brush adjoins said image carrier in a zone where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear

velocity of said magnetic carrier grains.

33. In a device comprising a developer carrier, facing an image carrier and accommodating magnets therein, and causing said developer carrier to convey a two-component type developer, which is made up of toner grains and magnetic carrier grains holding said toner grains, to a developing zone, and applying an electric field between said developer carrier and said image carrier to thereby develop a latent image formed on said image carrier, a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and then fall and said magnet brush adjoins said image carrier in a zone where said electric field has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner

grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

34. An image forming apparatus comprising:

a photoconductive image carrier configured to form a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein at least one position where brush chains formed by the magnetic carrier grains rise exists in a portion where an electric field formed between said developer carrier and said image carrier has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R) / (3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c / (100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said

toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

35. An image forming apparatus comprising:

a photoconductive image carrier configured to form a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein at least one continuous position where brush chains formed by said magnetic carrier grains rise and then fall down exists in a portion where an electric field formed between a facing zone where said image carrier and said developer carrier face each other has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

36. An image forming apparatus comprising:

a photoconductive image carrier configured to form a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein the magnetic carrier grains, holding the

toner grains thereon, splash said toner grains toward said image carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

37. An image forming apparatus comprising:

a photoconductive image carrier configured to form a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains

supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein a magnet brush formed by said magnetic carrier grains, holding said toner grains thereon, rub or adjoin said image carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854 x 10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

38. An image forming apparatus comprising:

a photoconductive image carrier configured to form

a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and then fall, said magnet brush contact said image carrier to thereby splash said free toner grains toward said image carrier and said magnet brush rubs or adjoins said developer carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq |(A \cdot \rho_T \cdot d \cdot R)/(3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL})|$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c/(100 - T_c) \cdot d^3 \cdot \rho_T$, A

denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

39. An image forming apparatus comprising:

a photoconductive image carrier configured to form a latent image thereon;

a charger configured to uniformly charge said image carrier;

a developing device facing said image carrier, storing toner grains and magnetic carrier grains supporting said toner grains and configured to form a toner image on said image carrier; and

an image transferring device configured to transfer the toner image from said drum to a recording medium;

wherein a magnet brush, consisting of said magnetic carrier grains holding said toner grains thereon and gathering in a form of brush chains, and free toner grains to be released from said carrier grains is formed, said toner grains are released when said brush chains rise and

then fall and said magnet brush adjoins said image carrier in a zone where an electric field formed in a facing zone, in which said image carrier and said developer carrier face each other, has a strength E (V/m) expressed as:

$$E \geq | (A \cdot \rho_T \cdot d \cdot R) / (3B^{1/2} \cdot \varepsilon^0 \cdot V_{SL}) |$$

where B is representative of $Tc \cdot D^3 \cdot \rho_c / (100 - T_c) \cdot d^3 \cdot \rho_T$, A denotes a mean amount of charge (μC/kg) deposited on said toner grains, Tc denotes a content of said toner grains (wt%), d denotes a mean grain size (μm) of said toner grains, D denotes a mean grain size (μm) of said magnetic carrier grains, ρ_T denotes a specific weight (kg/m^3) of said toner grains, ρ_c denotes a specific gravity (kg/m^3) of said carrier grains, ε_o is 8.854×10^{-12} (F/m), R denotes a diameter of said developer carrier, and V_{SL} denotes a linear velocity of said magnetic carrier grains.

40. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said

image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and, assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly at a mean flight velocity of 1 m/s or below when $V_{PC} - V_{DC} = 400$ V holds.

41. The method as claimed in claim 40, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

42. The method as claimed in claim 40, wherein the free toner grains part from the carrier grains in the developing zone where said free toner grains are capable of moving toward the latent image.

43. The method as claimed in claim 40, wherein a zone where the free toner grains part from the carrier grains is controlled by said magnetic field forming means.

44. The method as claimed in claim 43, wherein the zone where the free toner grains part is positioned upstream of a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

45. The method as claimed in claim 43, wherein the zone where the free toner grains contains a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

46. The method as claimed in claim 40, wherein the magnet brush rubs said image carrier.

47. The method as claimed in claim 40, wherein the electric field comprises an alternating electric field.

48. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains

thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and, assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a standard deviation of a flight velocity distribution of 0.51 or above when $V_{PC} - V_{DC} = 400$ V holds.

49. The method as claimed in claim 48, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

50. The method as claimed in claim 48, wherein the free toner grains part from the carrier grains in the developing zone where said free toner grains are capable of moving toward the latent image.

51. The method as claimed in claim 48, wherein a zone where the free toner grains part from the carrier grains is controlled by said magnetic field forming means.

52. The method as claimed in claim 51, wherein the zone where the free toner grains part is positioned

upstream of a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

53. The method as claimed in claim 51, wherein the zone where the free toner grains contains a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

54. The method as claimed in claim 48, wherein the magnet brush rubs said image carrier.

55. The method as claimed in claim 48, wherein the electric field comprises an alternating electric field.

56. In a method of developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush

chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and, assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a mean flight velocity of 0.65 m/s or below when $V_{PC} - V_{DC} = 200$ V holds.

57. The method as claimed in claim 56, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

58. The method as claimed in claim 56, wherein the free toner grains part from the carrier grains in the developing zone where said free toner grains are capable of moving toward the latent image.

59. The method as claimed in claim 56, wherein a zone where the free toner grains part from the carrier grains is controlled by said magnetic field forming means.

60. The method as claimed in claim 59, wherein the zone where the free toner grains part is positioned upstream of a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

61. The method as claimed in claim 59, wherein the zone where the free toner grains contains a closest position where said image carrier and said developer carrier are closest to each other in a direction of movement of the developer.

62. The method as claimed in claim 56, wherein the magnet brush rubs said image carrier.

63. The method as claimed in claim 56, wherein the electric field comprises an alternating electric field.

64. In a device for developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and, assuming that a potential of said image carrier is V^{PC} and

that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly at a mean flight velocity of 1 m/s or below when $V_{PC} - V_{DC} = 400$ V holds.

65. The device as claimed in claim 64, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

66. In a device for developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and,

assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a standard deviation of a flight velocity distribution of 0.51 or above when $V_{PC} - V_{DC} = 400$ V holds.

67. The device as claimed in claim 66, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

68. In a device for developing a latent image formed on a surface of an image carrier with toner grains, which constitute a developer together with magnetic carrier grains for supporting said toner grains, by depositing said developer on a developer carrier, which faces said image carrier and accommodates magnetic field forming means therein, causing said developer carrier to convey said developer to a developing zone formed between said image carrier and said developer carrier, and forming, in said developing zone, a magnet brush consisting of said magnetic carrier grains, which hold said toner grains thereon and gather in a form of brush chains, and free toner grains to be released from said carrier grains, said brush

chains of said magnetic carrier grains flow in said developing zone while forming said magnet brush, and, assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a mean flight velocity of 0.65 m/s or below when $V_{PC} - V_{DC} = 200$ V holds.

69. The device as claimed in claim 68, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

70. An image forming apparatus comprising:

an image carrier configured to form a latent image thereon; and

a developing device facing said image carrier and accommodating magnetic field forming means therein;

wherein said developing device comprises a developer carrier configured to convey a two-component type developer, consisting of toner grains and magnetic carrier grains for supporting said toner grains, deposited thereon to a developing zone where said developer carrier faces said image carrier to thereby form a magnet brush, which include free toner grains parted from said magnetic

carrier grains, and develops the latent image with said magnet brush,

in the event of development, brush chains formed by said magnetic carrier grains flow while releasing said free toner grains,

assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly at a mean flight velocity of 1 m/s or below when $V_{PC} - V_{DC} = 400$ V holds.

71. The device as claimed in claim 70, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

72. An image forming apparatus comprising:

an image carrier configured to form a latent image thereon; and

a developing device facing said image carrier and accommodating magnetic field forming means therein;

wherein said developing device comprises a developer carrier configured to convey a two-component type developer, consisting of toner grains and magnetic carrier grains for supporting said toner grains, deposited

thereon to a developing zone where said developer carrier faces said image carrier to thereby form a magnet brush, which include free toner grains parted from said magnetic carrier grains, and develops the latent image with said magnet brush,

in the event of development, brush chains formed by said magnetic carrier grains flow while releasing said free toner grains,

assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a standard deviation of a flight velocity distribution of 0.51 or above when $V_{PC} - V_{DC} = 400$ V holds.

73. The device as claimed in claim 72, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.

74. An image forming apparatus comprising:

an image carrier configured to form a latent image thereon; and

a developing device facing said image carrier and accommodating magnetic field forming means therein;

wherein said developing device comprises a developer carrier configured to convey a two-component type developer, consisting of toner grains and magnetic carrier grains for supporting said toner grains, deposited thereon to a developing zone where said developer carrier faces said image carrier to thereby form a magnet brush, which include free toner grains parted from said magnetic carrier grains, and develops the latent image with said magnet brush,

in the event of development, brush chains formed by said magnetic carrier grains flow while releasing said free toner grains,

assuming that a potential of said image carrier is V_{PC} and that a DC component of a potential of said developer carrier is V_{DC}, said free toner grains, parted from said magnetic carrier grains flowing, fly with a mean flight velocity of 0.65 m/s or below when $V_{PC} - V_{DC} = 200$ V holds.

75. The device as claimed in claim 74, wherein the free toner grains are caused to move toward said image carrier, and subsequently the carrier grains are moved from said image carrier toward said image carrier and toner grains are moved from said image carrier toward said carrier grains to thereby develop the latent image.